

REMARKS

Claims 1 through 11 and 13 through 23 are pending in the application. Claims 6 through 10 and 17 through 22 have been withdrawn.

Claims 1, 11, and 23 stand provisionally rejected on the basis of non-statutory double patenting over co-pending U.S. Applications 10/694,240; 10/325,140; and 10/687,006, all of which are assigned to the assignee of the present application. It is respectfully requested that the provisional double patenting rejection be held in abeyance with respect to the present application until such time as the presence of allowable subject matter is indicated in the present application.

Independent claim 1 stands rejected under §103(a) as unpatentable over Haynes '071 in view of Maggio '134, as set forth on pages 6 and 7 of the Office Action. Claim 1 also stands rejected under §103(a) in view of the combination of Haynes '071, Maggio '134, and Kisler '143, as set forth on pages 13 and 14 of the Office Action. It is respectfully submitted that independent claim 1 as amended and presented herein patentably distinguishes over the cited combination of references, as discussed below.

The method of making a nonwoven web as called for in claim 1 includes the steps of providing a plurality of fibers, and subjecting the fibers to a pneumatic attenuation force in a drawing slot. The velocity of the fibers is reduced in a diffusion chamber that is spaced from an exit of the drawing slot in the direction of travel of the fibers. The diffusion chamber is formed substantially between opposed diverging side walls. The fibers are subjected to an applied electrostatic charge before the fibers enter the diffusion chamber. The electrostatic charge is applied by two or more oppositely directly electrostatic charging units. Each of these electrostatic charging units includes

an emitter device and a “target” or collector device and are “oppositely directed” such that at least one emitter device is configured on each side of the fibers so that an electrostatic charge is generated from opposite directions across the traveling path of the plurality of fibers. The fibers are then collected into a web on a moving forming surface.

The obviousness rejection based on the combination of Haynes '071 and Maggio '134 is premised on the assertion that it would have been obvious for one of ordinary skill in the art to combine the diffusion chamber of Maggio '134 with Haynes '071 to arrive at the method of claim 1. Even if one of ordinary skill in the art were to add a diffusion chamber to the apparatus of Haynes '071, such combination is still lacking an essential feature of claim 1, namely that the electrostatic charge is applied by two or more oppositely directed charging units such that at least one emitter device from at least one charging unit is configured on each opposite side of the fibers so that the electrostatic charge is generated from opposite directions with respect to the direction of travel of the fibers. Haynes '071 describes and illustrates a single charging unit within the fiber draw unit that includes rows 20 of emitter pins that produce a corona discharge against the target electrodes 22. Haynes '071 does not disclose or suggest the use of a second one of these charging units oppositely oriented such that the pins 20 would be on the opposite side of the fibers. Claim 1 is amended herein to particularly set forth the structure of the oppositely directed electrostatic charging units, and the single charging unit structure in Haynes '071 does not satisfy claim 1.

It is also respectfully submitted that any suggestion or motivation to combine the diffuser of Maggio '134 with the combination of Haynes '071 is not well founded, as set

forth in detail in applicants' last amendment. In particular, Maggio '134 expressly teaches that the electrostatic charging unit is situated downstream of the diffuser or integrated within the diffuser, but not before a diffuser that is spaced from the exit of a drawing slot, as called for in amended claim 1. Maggio does not provide any teaching, suggestion, or reason to apply the electrostatic charge to the fibers before the fibers enter the diffuser assembly, and in fact expressly teaches away from such a feature.

Claim 1 also patentably defines over the combination of Haynes '071, Maggio '134, and Kisler '143. Kisler '143 relates to a method and apparatus for uniformly charging a web of material, and not a curtain containing a plurality of individual fibers. In addition, the method and apparatus of Kisler '143 are fundamentally different from any desired feature of a fiber draw unit/diffuser combination. Kisler '143 teaches to apply a charge having a first magnitude and polarity across the moving web to either neutralize or change the polarity of the electrostatic web charges. After being subjected to the first field, the web is then moved to a second location wherein the same side of the web is subjected to a second electrostatic field having a different magnitude and opposite polarity in order to neutralize or change the polarity of the web charge that exists on the web after exiting from the first field. This reference is not pertinent to a process for drawing individual fibers and does not present to one skilled in the art any suggestion or teaching that oppositely disposed electrostatic charging units may be used to impart an electrostatic charge to individual fibers in a fiber draw unit, with at least two of the charging units being disposed so as to direct a charge at opposite directions with respect to the traveling path of the fibers. The only thing "opposite" in the arrangement of Kisler '143 is the polarity of the charge applied to the same surface

of a moving web. Again, Kisler '143 is concerned with neutralizing or minimizing random charge on a web, and not for charging individual fibers to cause the fibers to spread with respect to each other. The combination of Haynes '071 and Maggio '134 is defective for the reasons set forth above, and the additional consideration of Kisler '143 does not remedy this deficiency.

Accordingly, it is respectfully submitted that independent claim 1 is patentable over the applied references. Claims 2 through 5 only further patentably distinguish a combination of elements in the method of claim 1 and are thus also allowable. In addition, the applicants' remarks with respect to dependent claims 2 through 5 set forth in their last amendment are incorporated herein by reference.

Independent claim 11 stands rejected under §102(b) as anticipated by Schmidt '990. As amended herein, the method of claim 11 calls for subjecting the fibers to, and charging the fibers with, an applied electrostatic charge while the fibers are in the diffusion chamber. The charge is applied by two or more oppositely directed electrostatic charging units wherein an emitter device of at least one of the units is located upon each of the diverging side walls in the diffusion chamber. A target device for each of the emitter devices is located on the opposite diverging wall. Thus, with this arrangement, the electrostatic charge is generated from opposite directions by the oppositely directed charging units between the diverging side walls with respect to the direction of travel of the plurality of fibers through the diverging chamber. The apparatus of Schmidt '990 (U.S. Pub. No. 2004/0028763) discloses an arrangement wherein a single charging unit is configured within the diffusion chamber. In particular, referring to Figs. 2 and 3, the electric field is established between the electrode needles

11 and the target electrode or plate 8. These elements constitute a single charging unit, and do not satisfy the requirements of claim 11 calling for two such units to be oppositely disposed.

Claim 11 also stands rejected as anticipated by Taylor '722, particularly Fig. 3 of the reference that incorporates power supply units 58 at the side walls 42 of the diffuser 40. These power supply units do not constitute electrostatic charging units having an emitter located upon one diverging wall and an associated target device, such as a target plate or target electrode, located on the opposite diverging wall so that an electrostatic charge is generated from opposite directions between such units. The purpose of the power supply units 58 in Taylor '722 is to charge each of the side walls with a polarity that matches the charge on the filaments imparted by the corona electrode assembly 27. Since the like electrical charges will then repel, electrostatic potential on the side walls 42 causes the filaments to be repelled from the side walls. The power supply units 58 are not configured as the corona electrode assembly 27 to impart a charge onto the filaments or fibers. Accordingly, it is respectfully submitted that independent claim 11 patentably distinguishes over Taylor '722.

Claim 11 is also rejected as obvious in view of the combination of Maggio '381 (U.S. 6,974,316) and Haynes '071. This rejection is premised on the assertion that one skilled in the art would combine the Haynes '071 charging unit in the diverging side walls of Maggio '381. As detailed in their last amendment, applicants submit that no proper motivation or reason to combine the references has been shown. In addition, even if one skilled in the art were to make the combination, such combination fails to teach the elements of claim 11 as amended and presented herein. As discussed

above, Haynes '071 teaches of a single electrostatic unit 18 that includes the rows of emitter pins 20 and the associated target electrode or plates 22 and deflector 24. Haynes '071 does not teach or suggest of the two oppositely directed electrostatic charging units as called for in amended claim 11 and discussed above. Accordingly, it is respectfully submitted that independent claim 11 distinguishes over the combination of Maggio '381 and Haynes '071, and is allowable.

Claims 13 through 16 only further patentably define the method of claim 11 and are thus allowable for at least the reasons claim 11 is allowable. In addition, the arguments set forth in the applicants' last amendment with respect to dependent claims 13 and 16 are incorporated herein by reference.

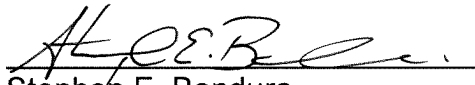
Independent claim 23 stands rejected as anticipated in view of Maggio '134. In particular, it is the Examiner's position that the limitations of prior claim 23 are still satisfied by the Maggio structure. Independent claim 23 is amended herein to set forth that the pneumatic attenuation force is provided by air consisting of attenuation air only entering the drawing slot from the drawing slot side wall that opposes the drawing slot side wall upon which the electrostatic charging unit is located. With this Amendment, it is respectfully submitted that the Maggio '134 structure cannot be interpreted to satisfy claim 23. Claim 23 is thus allowable.

With the present Amendment is respectfully submitted that all of the claims under consideration are allowable. Upon indication of allowability of such claims, the withdrawn claims will be cancelled and the provisional double patenting rejection overcome with a properly executed Terminal Disclaimer.

The Examiner is encouraged to contact the undersigned at his convenience should he have any questions regarding this matter or require any additional information.

Respectfully submitted,

DORITY & MANNING, P.A.

By: 
Stephen E. Bondura
Registration No.: 35,070

P.O. Box 1449
Greenville, SC 29602-1449
(864) 271-1592
fax (864) 233-7342